Claims

a2 Amended

1. An expandable stent (10), including

- an elastic tubular lattice structure having a first end zone (14), a second end zone (16), a longitudinal direction (L) and a radial direction (R),

- the lattice structure defining an outer diameter and an inner lumen and being formed by wall segments, which wall segments branch off at intersections (20), and

- the lattice structure being interrupted at at least some of the intersections (22), so as to increase the flexibility of the stent,

wherein

- the wall segments (24) are expanded at least at the interrupted intersections in the radial direction such that, upon curvature of the stent along the longitudinal direction, a reduction of the inner lumen due to the wall segments at the interrupted intersections is prevented.

2. A stent in accordance with claim 1, wherein in addition the wall segments in the first end zone (14) and/or in the second end zone (16) are expanded in the radial direction (R).

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3. A stent in accordance with at least one of the preceding claims, wherein the expansion of the wall segments is formed by an arcuate curvature of these wall segments along the longitudinal direction.

4. A stent in accordance with at least one of the preceding claims, wherein the wall segments are interrupted in regular distribution over the stent at substantially two thirds of all the intersections.

5. A stent in accordance with at least one of the preceding claims, wherein the lattice structure has in the expanded state of the stent apertures having an aperture width of maximally 9 mm.

6. A stent in accordance with at least one of the preceding claims, wherein the wall segments have a width between 0.12 mm and 0.17 mm.

7. A stent in accordance with at least one of the preceding claims, wherein the lattice structure has substantially a wall thickness of between 0.2 mm and 0.3 mm.

8. A stent in accordance with at least one of the preceding claims, wherein the stent consists of a metallic material.

9. A stent in accordance with claim 8, wherein the stent consists of a metallic material with shape memory.

10. A stent in accordance with claim 9, wherein the metallic material consists of an alloy which contains nickel and titanium.

11. A stent in accordance with claim 10, wherein the alloy of the stent has the following alloy moieties:

- nickel: 54.5 to 57 mass percent,
- titanium: 43 to 45.5 mass percent.

12. A production process for a stent, comprising the following steps:

- providing a tubular element with an external diameter, and inner lumen, a first end zone and a second end zone;

- slotting the tubular element into a lattice structure, the lattice structure being formed by wall segments, which wall segments branch off at intersections;

- interrupting at least some of the intersections at selected positions, so as to increase the flexibility of the stent;

- expanding the wall segments at least at the interrupted intersections in the radial direction such that, upon curvature of the stent along the longitudinal direction, a reduction of the inner lumen due to the wall segments at the interrupted intersections is prevented.

13. A process in accordance with claim 12, wherein the step of expanding comprises expanding the wall segments in the radial direction in the first and second end zones.

14. A process in accordance with claims 12 or 13, wherein the steps of the process are carried out in the listed sequence.

15. A process in accordance with at least one of claims 12 to 14, the stent consisting of a metallic material, and wherein the process provides in the step of expanding the wall segments or after this step, heat treatment of the

stent, so as to achieve a temperature reactive shape memory effect in the zone of the expanded wall segments.

16. A process in accordance with claim 15, wherein the process further comprises between the steps of slotting the tubular element and interrupting the intersections, a step of influencing the structure of the metal lattice of the stent.

17. A process in accordance with at least one of claims 12 to 16, wherein the process before the step of interrupting the intersections further comprises a step of heat treatment, in order to achieve a temperature reactive shape memory effect in the entire stent region.

18. A process in accordance with at least one of claims 12 to 17, wherein the process finally further comprises a step of polishing the stent.

19. A process in accordance with at least one of claims 12 to 18, wherein interrupting the intersections takes place in the step of slotting.

20. A process in accordance with at least one of claims 12 to 19, wherein the steps of slotting are carried out by laser cutting.

21. A process in accordance with at least one of claims 12 to 20, wherein the step of expanding includes the following partial steps:

- placing the stent on a mandrel, the mandrel being designed as a counter-part to the expanded shape of the stent;

- heating the stent placed on the mandrel;

- cooling the heated stent;

- removing the stent after cooling from the mandrel.

22. A process in accordance with claim 21, wherein before the step of removing the cooled stent from the mandrel, a mold element is placed externally over the mandrel and the stent, which element corresponds in its contour to the expanded shape of the stent.

23. A process in accordance with one of claims 21 or 22, in which the stent consists of a metallic material with a dislocation threshold temperature, and the stent is heated in the partial step of heating to a temperature above the dislocation threshold temperature and is cooled during the cooling step to a temperature below the dislocation threshold temperature.

24. A stent in accordance with at least one of claims 1 to 11, in combination with an application system.

25. A stent in accordance with claim 24, wherein the application system contains a balloon dilation catheter.

26. A stent in accordance with one of claims 24 or 25, wherein the application system is a system in accordance with the Seldinger technique for catheterization of bodily vessels.